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November 6, 2000

Mr. Ralph Dollhopf, SE-GI
U.S. EPA Large Lakes Research Station/ORD
U.S. EPA Response Section #1
9311 Groh Road
Grosse Ile, Michigan 48138-1697

Re: Revised Text Section for MichCon H EE/CA; TDD S05-9809-005

Dear Ralph:

Attached, please find the revised comparative analysis section for the Michigan Consolidated site EE/CA. This section incorporates the comments we discussed on Friday November 3, 2000. Please contact me at your convenience if you need any additional information concerning this submittal.

Sincerely,
ECOLOGY AND ENVIRONMENT, INC.

Dan Sewall
START Program Manager

Attachment

cc: G. Nabasny, START PO
M. McReynolds, START CO

COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

An engineering evaluation/cost analysis (EE/CA) report has been prepared by Michigan Consolidated Gas Company (MichCon) for the South Green Avenue site in Detroit, Michigan. A comparative analysis is necessary to evaluate the relative performance of each alternative in relation to U.S. EPA's three broad criteria of effectiveness, implementability, and cost. This comparative analysis will be used to support the selection of the appropriate alternative to be implemented for the South Green Avenue site.

The removal action objective, as developed in Section 6 of the EE/CA, is to ensure that hazardous substances, pollutants, or contaminants in subsurface bulk storage containers (i.e., tar tanks, tar wells, gas holders) do not pose a future threat of release to the environment. Section 7 identified and evaluated several remedial technologies to address the removal action objective. Each of the technologies was initially screened, based on the criteria of implementability and technical effectiveness. The screening evaluation resulted in the identification of five workable alternatives. Section 8 of the EE/CA evaluated the viability of each of the alternatives to address soil contamination and other considerations which were necessary to implement the particular alternative. The five alternatives retained for detailed analysis include the following:

- **Alternative 1: Containment with Site Restrictions**
- **Alternative 2: Excavation with On-Site Thermal Desorption**
- **Alternative 3: Excavation with On-Site Incineration**
- **Alternative 4: Excavation with Off-Site Treatment at a Power Plant**

- **Alternative 5: Excavation with Off-Site Disposal**

All of the alternatives are assumed to address the known site contamination. The length of time necessary to achieve complete removal of the contaminants depends on the technology employed. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another, so that key trade-offs that would affect the removal action selection can be identified.

EFFECTIVENESS

The criteria of effectiveness is evaluated based on the five distinct subcriteria: overall protection of human health and the environment; compliance with ARARs; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; and short-term effectiveness.

Overall Protection: Alternative 1, Containment with Site Restrictions, provides the least protection of human health or the environment in that the wastes are proposed to be left on site. Although a soil cover and land use restrictions could be protective of public health under this alternative, the continued presence of wastes could pose a future threat of a release to the shallow water-bearing zone beneath the site. However, it should be noted that this water-bearing zone is not considered to be a useable aquifer, as defined under the MDEQ Environmental Response Division's Part 201 of Public Act 451 of 1994, as amended. The four remaining alternatives all propose excavation of the wastes. Therefore, the material handling problems inherent to excavation of the wastes and the potential fugitive emissions of VOCs and particulates during excavation would be equal. Alternatives 2 and 3 propose thermal treatment of the wastes on site, and Alternative 4 proposes thermal treatment of the wastes off site. The potential for emissions of contaminants from thermal treatment of the wastes are assumed to be essentially equal; only the location would differ between the alternatives.

It is assumed that Alternative 5 would have very similar fugitive emissions from the wastes during excavation, however, Alternative 5 does not destroy the wastes. The wastes are relocated to a secure landfill where they would be encapsulated and monitored with other similar

wastes. Therefore, Alternatives 2, 3, 4, and 5 are assumed to be equally complete and comprehensively protective in that the wastes would be removed from the site.

Similarly, the requirements for treatment of groundwater encountered during excavation, would be essentially the same for Alternatives 2, 3, 4, and 5. Alternative 1 is the least complete and protective in that the waste would remain on site and future site use would be restricted.

Compliance with ARARs: All of the alternatives have the ability to comply with the action-specific and/or chemical-specific ARARs appropriate for each action, including the MDEQ's Part 201 industrial soil cleanup criteria. The alternatives will also comply with the NCP removal action goals for the protection of human health, specifically the prevention or abatement of actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants. However, because Alternative 1 leaves waste materials in place, it is less certain to provide complete abatement of exposure to wastes, and will require long-term monitoring. It is possible that periodic monitoring may identify the need for additional action at the site. For example, if contaminants in groundwater are detected at increased concentrations or at off-site locations at some future time, additional action(s) may be required. On-site treatment alternatives will require the acquisition of appropriate permits and coordination of activities with local emergency response organizations. Off-site treatment and disposal activities will also require coordination and compliance with DOT regulations, and additional permitting, manifesting, and reporting requirements.

Long-Term Effectiveness and Permanence: Alternatives 2, 3, and 4 would afford the highest degree of long-term effectiveness and permanence because these alternatives use treatment to reduce the hazards posed by the wastes at the site. Alternative 5 provides slightly less long term permanence because, although the wastes would be permanently removed from the site, they would be transferred to another location (i.e., a landfill) which would be required to effectively manage the wastes. Alternative 1 provides the least long-term effectiveness or permanence because the wastes would be allowed to remain in-place, the alternative relies solely on a thin soil cover and institutional controls to prevent exposure, and post-removal site controls (PRSC) will be required to maintain the integrity of the action. With Alternative 1, it is also possible that contaminated groundwater could continue to migrate. However, because it is

assumed that there are no downgradient receptors, it is unlikely that downgradient water supply wells would be impacted in the future

Reduction of Toxicity, Mobility, or Volume Through Treatment: EPA's policy of preference for treatment, i.e., for technologies that will permanently and significantly reduce toxicity, mobility, or volume of the wastes as their principal element, is satisfied by Alternatives 2, 3, 4, and to a lesser degree, Alternative 5. Alternative 1 provides no reduction of toxicity, mobility, or volume through treatment other than natural attenuation. Alternatives 2, 3, and 4 would reduce both the volume (total amount) and toxicity (concentration) of the organic contaminants in soil through thermal treatment actions. However, the toxicity, mobility or volume of metal contaminants, should they be detected in MGP wastes excavated from the site, will not be reduced by Alternatives 2, 3, and 4, and metal contaminants may be actually be concentrated in the ash produced by Alternatives 3 and 4.

Alternative 5 provides for relocation of the waste to a secure location. Therefore, although off-site disposal is not a treatment technology, the mobility of the wastes will likely be reduced due to placement in a secured, engineered landfill.

Alternatives 2, 3, 4, and 5 would contain and treat groundwater encountered during excavation, and therefore would reduce concentrations in the present perched groundwater aquifer. The statutory preference for treatment would be satisfied by on-site treatment and/or discharge of groundwater to the local WWTP.

Short-term Effectiveness: Alternative 1 would have the least short-term impact because the wastes would not be disturbed. They would be allowed to remain in-place, and would be contained through placement of a cover. Exposure control would be established quickly by placement of the cover, and air quality impacts to workers and local individuals from contaminated fugitive emissions would be significantly less than from other alternatives.

Alternatives 2, 3, 4 and 5 would provide similar impacts resulting from excavation and material handling. However, there is the potential for emissions of contaminants, and the possibility of an accident involving a transportation vehicle, during transportation to an off-site location under Alternatives 4 and 5. Because of the expected short transportation distance to an

appropriate landfill under Alternative 5, this alternative provides less short-term risk to the public than Alternative 4.

It is assumed that all of the alternatives can be completed in full compliance with federal, state, and local ARARs during a single construction season. Although there is limited transportation risk for Alternatives 2 and 3, the risk to workers and nearby residents during excavation and on-site thermal treatment under these alternatives is significantly greater than with other alternatives. Risks of fugitive emissions, increased traffic, and exposure is expected to be present for approximately 3.5 months, based on a feed rate of 200 tons/day. This is almost double the anticipated duration of Alternatives 4 and 5.

IMPLEMENTABILITY

The criteria of implementability is evaluated based on the three distinct subcriteria: technical feasibility; administrative feasibility; and availability of services and materials.

Technical Feasibility: All of the alternatives differ in their technical feasibility. From an engineering standpoint, Alternative 3 is the most complicated system, involving material pre-treatment, sophisticated air pollution control operations, and the generation of wastewaters and ash as by-products of incineration. Alternative 1 is the least complicated, requiring only a 6-inch cover. Alternatives 2 and 4 are less complicated than Alternative 3, however, they are technically more complicated than Alternative 5. With the exception of Alternative 1, the performance of each alternative is easy to monitor in that much of the MGP waste will be visible during excavation and removal activities, and removal confirmation will be verified through sampling and analysis.

Off-site transportation of wastes will be required with both Alternatives 4 and 5. The transportation distance to an off-site power plant required for Alternative 4 is expected to be considerably greater than what would be anticipated for Alternative 5, disposal at a local facility. Storage capacity for contaminated soils at the off-site power plant may also pose a feasibility problem. It is likely that off-site transportation of fill to the site will be required for all alternatives, with the greatest volume of fill being required for Alternatives 4 and 5, whereas a

moderate volume of fill would be needed for Alternative 1, and the least amount would be required for Alternatives 2 and 3.

Administrative Feasibility: All of the alternatives will require some level of administrative effort. Alternatives 2 and 3 are likely to require similar administrative effort to coordinate the removal and on-site treatment activities between agencies, such as U.S. EPA and other federal, state, and local agencies. Alternative 4 will require coordination with these same agencies, as well as with the selected power plant. The administrative feasibility for Alternatives 1 and 5 is expected to be similar, and will likely require substantially less coordination and time than for Alternatives 2, 3, and 4.

Availability of Services and Materials: It is assumed that cover materials for Alternative 1 are readily available, and that no special services or materials are required. Alternatives 2, 3, 4, and 5 require traditional labor, construction materials, and conventional equipment, which should be readily available for removal of contaminants. However, Alternatives 2, 3, and 4 would also require specialized equipment for thermal treatment and destruction of the wastes. Special coordination for these alternatives is anticipated to be required, but this is not considered to be an unachievable effort. However, implementation of the respective alternative may be delayed while awaiting delivery of long lead-time equipment or, in the case of Alternative 4, schedule availability for destruction of the waste at a power plant. For Alternative 5, it is assumed that the wastes can be disposed of at an appropriate facility with minimal coordination. Fill and backfill materials required for all alternatives are readily available from local sources.

State and Local Public Acceptance: Alternative 1 is the least likely to be acceptable to the local community because the wastes are left in-place and the future use of the site is restricted, thereby not fulfilling the Brownfields redevelopment goals envisioned for the site. On-site treatment, as provided by Alternatives 2 and 3, is likely to be more acceptable than Alternative 1. However, either Alternative 4 or 5, which propose the removal of the wastes to other locations, are believed to be more acceptable to the local public than Alternatives 1, 2, or 3. Alternatives 2, 3, 4, and 5 are equally acceptable in that the final action would result in the removal of all known wastes, and the future use of the site would be unrestricted.

COSTS

The EE/CA assembled by MichCon has identified five alternatives with varying degrees of difficulty to implement. The EE/CA presented a range for the costs associated with Alternatives 2, 3, 4, and 5 because of the uncertainty associated with the volumes of the waste/soil to be excavated and addressed. It is believed that the presentation of a range of costs to complete the alternatives is a reasonable approach to establishing the potential costs for implementation of the respective alternative. An estimated cost range was not presented for Alternative 1 because the magnitude of the action was much more predictable. A summary of the alternatives and the estimated costs are as follows:

Alternative 1:	
Containment with Site Restrictions	$202,540
Alternative 2:	
Excavation with On-Site Thermal Desorption	$2,324,271-$3,205,496
Alternative 3:	
Excavation with On-Site Incineration	$4,906,551-$6,450,464
Alternative 4:	
Excavation with Off-Site Thermal Treatment at a Power Plant	$3,465,402-$5,483,555
Alternative 5:	
Excavation with Off-Site Disposal	$919,626- $1,354,456

Alternatives 2, 3, and 4 exceed the $2 million/12-month statutory limit for a Fund-financed removal action pursuant to Section 300.415 (b)(5) of the NCP. It should be noted that these limits apply only to fund-financed actions. If potentially responsible parties (PRPs) perform the removal, the limits do not apply. In addition, these alternatives would be an integral part of, and contribute to the long-term remedial action goals for the site, and would therefore meet the "consistency" waiver exemption specified in Section 104(c)(1) of 42 United States Code (U.S.C.) 9604(c)(1) of CERCLA.

Recommendations

Among all the alternatives, Alternative 1 is the least protective of human health and the environment, because it proposes that nothing be done to treat the contaminants other than to allow for natural attenuation. Alternatives 2, 3, 4, and 5 provide similar results in that after completion of the proposed action, the identified wastes will be removed from the site, thereby reducing or eliminating potential adverse exposure to human and environmental receptors. It is assumed that Alternatives 2, 3, 4, and 5 can all be completed in a manner which is protective of workers, nearby residents, and site visitors, and that the long-term effects of these actions would be similar. However, the potential short-term effects posed by Alternative 5 would be significantly less than those expected for Alternatives 2 and 3, and possibly Alternative 4. It is further assumed that any unforeseen conditions that may be encountered during implementation of the actions can be addressed by modifying the field procedure in progress, and that completion of the actions will be determined by confirmatory sampling and analysis. The estimated cost for Alternative 5 is reasonable, considering the increased level of effectiveness and protection achieved as compared to Alternative 1, as well as the similarity of protectiveness when compared to Alternatives 2, 3, and 4. Therefore, it is recommended that Alternative 5, Excavation with Off-Site Disposal of Wastes, be pursued for implementation at the South Green Avenue site.